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Draft Environmental Impact Statement

Granite Creek Watershed Mining Project

North Fork John Day Ranger District
Umatilla National Forest

Whitman Ranger District
Wallowa-Whitman National Forest

Baker and Grant Counties, Oregon

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Abstract

This Draft Environmental Impact Statement (DEIS) documents the analysis of proposed mining activities in the Granite Creek Watershed. This DEIS has been prepared to determine the potential environmental impacts from 28 proposed mining Plans of Operations. The Granite Mining analysis area (approximately 94,480 acres) is located on the Whitman Ranger District of the Wallowa-Whitman National Forest, and the North Fork John Day Ranger District of the Umatilla National Forest, near the towns of Granite, Oregon in Baker County and Ukiah, Oregon in Grant County. The preferred alternative is Alternative 3 which incorporates additional Forest Service resource protection measures and requirements to prevent or minimize impacts from the proposed activities. Alternative 3 will authorize the approval of mining operations with the additional Forest Service protection measures and requirements for those activities that do not require a 401 certification from the State of Oregon Department of Environmental Quality (ODEQ). Activities determined through this analysis to still have the potential for a discharge, even with Forest Service protection measures and requirements, would only be approved if the miner presents to the Forest Service a 401 certification from the ODEQ authorizing this activity or documentation from ODEQ that a 401 certification is not needed.

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Summary

Location of Project Area

The Granite Creek Watershed (approximately 94,480 acres) is located in the Blue Mountains of eastern Oregon and is primarily within the administrative boundaries of the Whitman Ranger District, Wallowa-Whitman National Forest (40,624 acres), and the North Fork John Day Ranger District, Umatilla National Forest (49,539 acres). Approximately 4,150 acres in the watershed are privately held. The Granite Creek Watershed is located approximately 30 miles west of Baker City, in Baker County, Oregon, and 40 miles southeast of Ukiah, in Grant County, Oregon.

Approximately 167 acres of the Granite Creek Watershed are located within the administrative boundaries of the Malheur National Forest, however, none of the proposed activities or roads in this project is located within the Malheur National Forest, therefore, those 167 acres will not be included in the decision for this analysis.

The legal description for the watershed is:

Township 8 South, Range 34, 35, 35½ and 36 East
Township 9 South, Range 34, 35, 35½, and 36 East
Township 10 South, Range 34, 35, 35 ½, and 36 East, Willamette Meridian.

Granite Creek is a tributary to the North Fork John Day River, which is a tributary to the John Day River. Granite Creek originates near the North Fork John Day Wilderness on the Wallowa-Whitman National Forest.

Purpose and Need for Action

Existing Condition

The 36 Code of Federal Regulations (CFR) 228.4 states that if a mine proposal is likely to cause significant disturbance of surface resources, the miner is required to submit a Plan of Operations (Plan) and according to 36 CFR 228.5 it will be analyzed by the authorized officer to determine the reasonableness of the requirements for surface resource protection. In the Granite Watershed, a number of mining Plans were previously approved in the early 1980s. Since then, environmental conditions have changed in this watershed, such as Endangered Species Act (ESA) fish were listed, requiring that the Plans address these changes. In addition to this, all of the Plans have either expired or completed their activities.

Two streams in the watershed (Bull Run Creek and Granite Creek) are currently listed as water-quality limited for sedimentation by the Oregon Department of Environmental Quality (DEQ) under section 303(d) of the Clean Water Act.

On July 10, 1998, Columbia River bull trout *(Salvelinus confluentus)* were listed as threatened under the Endangered Species Act (ESA). On May 24, 1999, Mid Columbia steelhead *(Oncorhynchus mykiss)*

were listed as threatened under the ESA. Both of these species are found in streams located within the Granite Creek Watershed. Redband trout (*Oncorhynchus mykiss*), which exists in the watershed, has been added to the Regional Forester's list of sensitive species; and Columbia spotted frog (*Rana luteiventris*) has a documented population in the watershed and is on the Regional Forester's sensitive species list.

There are approximately two dozen locations for Region - 6 Sensitive *Botrychium* plant species located within the Granite Creek Watershed on both the Wallowa - Whitman and Umatilla National Forests. The sites are represented by the following species: *Botrychium crenulatum, B. montanum, B. minganense, B. lanceolatum, B. lunaria* and *B. pinnatum*.

Desired Condition

Desired conditions for the surface resources on the mining claims in the Granite Creek Watershed are derived from goals, objectives, standards, and guidelines from the Wallowa-Whitman and Umatilla National Forests Land and Resource Management Plans (Forest Plans), public scoping, and interdisciplinary team input. Desired conditions provide a future vision for the area and can help in development of management options for the mining operations in the Granite Creek Watershed over time.

Twenty-eight Plans of Operations would be approved for the mining operations in the Granite Creek Watershed that include requirements and protection measures to ensure that adverse impacts to water quality and surface resources are minimized.

- Watershed values are protected to the fullest extent possible under existing laws in evaluating and developing mineral operating plans (*WWNF Forest Plan, page 4-25).*

- During development of operating plans or plan modifications, reasonable alternative mitigation measures and/or operating requirements will be developed to define the appropriate stipulations needed to protect other resources while still meeting the objectives of the minerals operator (miner). The test for operating plan requirements is "reasonableness" (*UNF Forest Plan, page 4-81*).

Purpose and Need

There is a need to authorize the approval of Plans of Operation submitted by the miners, as specified in 36 CFR 228.4(a), and to consider the Forest Service's responsibility to approve or require modifications to these Plans in accordance with federal mining and environmental laws. As described above, previous Plans in the area were approved prior to the listing of the bull trout and steelhead as threatened. Because conditions have changed, previous plans expired and new plans have been submitted, there is a need to approve these plans, as specified in 36 CFR 228.4(e).

Based on the number and nature of mining operations in the drainage, the existence of two listed fish species, and the current water quality-limited status of two streams in the watershed, the responsible officials determined that potential significant environmental impacts may occur in the Granite Creek Watershed, and therefore an EIS is required to disclose those impacts in detail, to analyze alternatives to the proposals, and to determine possible means of mitigating those impacts.

This EIS analyzes the direct, indirect, and cumulative effects of mining operations and of management requirements designed to reduce adverse environmental effects from those operations.

Issues

Significant issues are those points of concern that would change among the alternatives. A Forest Service interdisciplinary team (IDT) of resource specialists used comments gathered at internal and public scoping meetings and from letters from interested parties to help define significant issues. Alternatives to the proposed action are based on changes of impacts to these issues.

Significant Issue 1: Water Quality and Quantity

Water quality in the Granite Creek Watershed has been impaired by past timber harvest and road building, beaver trapping, grazing and hydraulic, placer, and dredge mining. These activities have altered stream channel morphology, abundance and distribution of riparian vegetation, runoff patterns and volumes, and the stream-valley floor surface hydrologic connection, and type of ground cover. The result has been changes in flow regimes, the movement and storage of sediment, the movement and storage of water in the watershed, bank stability, and substrate composition. Water quality parameters affected by these changes are stream temperatures, concentrations of heavy metals, and water clarity (turbidity). The Forest Service has summer stream temperatures for 12 streams in the Granite Creek watershed. All of these streams have temperatures that exceed the applicable state water quality standard of 53.6°F for bull trout spawning and rearing (See Appendix 5). Prior to 2010, four of these streams (Beaver, Bull Run, Clear and Granite) were 303(d) listed by Oregon Department of Environmental Quality (ODEQ) as water quality limited for temperature and in two cases, sedimentation. As a result of the completion of the John Day River Basin Total Maximum Daily Load (TMDL) and Water Quality Management Plan (WQMP) in 2010 (ODEQ 2010), the four streams were delisted listed for temperature. However, delisting does not mean that the stream temperatures are now acceptable, but that all feasible steps will be made to decrease the elevated stream temperatures and prevent further rises. As such, Plans were evaluated for potential impacts to stream temperatures to determine compliance with the TMDL/WQMP. With respect to sedimentation, Bull Run and Granite Creeks remain 303(d) listed as impaired and Plans were evaluated for the potential to increase sedimentation on these streams.

Table I-4: 303(d)-Listed Streams in the Granite Creek Watershed (*ODEQ, 2010*)

Stream Name	Subwatershed Location	Reason for Listing
Bull Run Creek	(170702020201)	Sedimentation (river mile 0 to 9.3)
Granite Creek	(170702020202)	Sedimentation (river mile 11.2 to 16.2)

Key Indicators

Measurements used to compare the alternatives in relation to this issue:

1. **Sediment input** – number of Plans that have the potential for a discharge.
2. **Heavy metal input** – number of Plans that have the potential for a discharge of heavy metals via groundwater or directly via surface water.
3. **Warm water input** - number of Plans that have the potential for a discharge of warm water via groundwater flow.
4. **Creosote input** -- number of Plans that have the potential for a discharge of creosote into surface water
5. **Stream temperature** – number of Plans that have the potential to locally alter stream temperatures from a water withdrawal, input of warm water, or a groundwater flow reversal.
6. **Stream flow** – number of Plans that have the potential to locally reduce stream flow from a water withdrawal or groundwater flow reversal.

Significant Issue 2: Fish Habitat and Species

Fish species listed as threatened under the Endangered Species Act and their designated critical habitat occurring within the Granite watershed are Columbia River Bull Trout and Mid-Columbia River steelhead. Mid-Columbia Spring Chinook Salmon are Forest Service Sensitive and occupy Magnuson-Stevens Act-designated Essential Fish Habitat. Interior Redband trout (*Oncorhynchus mykiss gairdneri*) are distributed throughout the Granite watershed, are on the Regional Forester's list of sensitive species, and are a UNF and WWNF management indicator species (MIS). Another Regional Forester's sensitive fish species located in the project area is Westslope cutthroat trout (*Oncorhynchus clarki lewisi*).

Approximately 40 percent (37,445 acres) of the Granite Mining analysis area occupies Management Area 18 - Anadromous Fish Emphasis. Approximately 17 percent (16,242 acres) of the Granite Mining analysis is in Management Area C7 on the UNF-Special Fish Management Area. These management areas are intended to achieve and maintain optimum conditions for anadromous fish. Emphasis is placed on providing anadromous fish habitat at, or near, the maximum potential of the watershed where this area is applied. Emphasis is placed on protecting fish habitat and habitat investments through reasonable provisions in plans of operation and in reclamation requirements.

Past placer mining operations, in an effort to expose placer deposits in the Granite Creek Watershed, have removed trees, shrubs, and ground cover in the flood-prone areas immediately adjacent to the Granite, Clear, Bull Run, Boulder, Last Chance, Ten Cent, Olive, Ruby, Lightning, McWillis, Quartz and Lucas Gulch creeks. This past mining-caused ground disturbance has altered:

- Instream habitat such as pool frequency and distribution, altered substrate composition (including a loss of fine material), off channel habitat, and instream large woody material (LWM), and
- Riparian habitat such as canopy cover adjacent to stream reaches and bank stability.

Water quality has been affected by past placer mining operations. The exposed soil on the mining access roads and the disturbed flood-prone areas immediately adjacent to the Granite, Clear, Bull Run, Boulder, Last Chance, Ten Cent, Olive, Ruby, Lightning, McWillis, Quartz and Lucas Gulch creeks could increase the amount of sediment entering these streams, resulting in degradation of existing spring chinook salmon, summer steelhead, and redband trout spawning, incubating, and rearing habitat in these streams.

Key Indicators

Acres of areas with risk to:

1. **Instream habitat** (i.e. pool frequency and distribution, substrate composition, and channel complexity) and
2. **Riparian habitat** (i.e. riparian vegetation type and distribution that influence shade, bank stability, and large woody recruitment).

Plans with proposed activities with risk to fish species:

1. **Stream fording** (frequency and timing of crossing)
2. **Suction dredging**
3. **Water quality** (i.e. sediment inputs, heavy metal inputs, and water temperature increases)

Table 1-5: Streams with Listed and Sensitive Fish Species

Stream name	Forest	Spring Chinook	Mid-C Summer Steelhead	Columbia River Bull trout	Interior Redband trout
Granite Creek	UNF and WWNF	Present	Present	Present	Present
Boulder Creek	WWNF	-	Present	Present	Present
Last Chance Creek	WWNF	-	-	-	-
Bull Run Creek	WWNF	Present	Present	Present	Present
Clear Creek	UNF	Present	Present	Present	Present
Ruby Creek	UNF	Assumed in lower reaches	Present	Assumed in lower reaches	Present
Lightning Creek	UNF	Present	Present	Present	Present
Lucas Gulch	UNF	-	-	-	Assumed Present
Olive Creek	WWNF	Assumed present in lower reaches	Present	-	Present
McWillis Gulch	WWNF	-	Assumed in the lower reaches	-	Present in the lower reaches
Quartz Gulch	WWNF	-	Probable	-	Present
Ten Cent Creek	UNF	Present	Present	-	Present

- = not present, ?= unknown

Alternatives

Alternative 1 - No Action/No Change in Present Situation

- **Includes 27 areas covered by the Proposed Plans of Operation**

A "No Action" alternative is required by regulation in 40 CFR 1502.14(d). It is used in part to measure action alternatives to determine the effects of not implementing an action alternative. In this analysis, this alternative maintains the current situation; it allows the ongoing Notice of Intent activities to continue in the watershed. None of the proposed Plans would be approved. This alternative does not meet the

purpose and need to authorize the approval of proposed Plans of Operations in the Granite Creek Watershed. This alternative cannot be implemented, since Forest Service Regulations in 36 CFR 228, Subpart A, does not provide for denying a reasonable Plan of Operations. The Plans of Operations included in this alternative are in the analysis file.

The tables and maps in this chapter display the proposed Plans of Operations under Alternative 1.

The development of this alternative is in response to NEPA regulations 36 CFR 220.5(d) and 40CFR1502.14 (d). It is the result of not implementing the proposed action, which in this case is authorizing the approval of several proposed Plans of Operation in the Granite Creek Watershed Mining area. However, the Forest Service mining regulations (36 CFR Part 228) do not provide for the denial of a reasonable Plan of Operation on areas open to mineral extraction. Because of this, the no action alternative will be used as a base line for comparison of the effects.

For analysis purposes only, selection of the No Action Alterative would result in the following:

- Miners who have proposed to renew/continue with previously approved plans of operation would initiate reclamation and closure requirements on their existing mining sites, structures and user-created roads, in accordance with the requirements of their previously authorized Plan of Operation.

- Miners who have proposed an initial Plan of Operations would not receive authorization.

- Prospecting would continue as described under 36 CFR 228.4 provided it complies with federal and state laws. In areas open to mineral extraction, other activities would continue as defined by 36 CFR 228.4(a)&(a)(1).

Alternative 2 - Proposed Action (Plans of Operations as submitted by the Miners)

- Authorizing approval of 28 mining Plans of Operations as submitted by the miners (*Note that Tetra Alpha Placer, Mill and Lode has been split into 2 Plans under this alternative (Tetra Alpha Placer and Tetra Alpha Mill & Lode) (Table 2-2), therefore the change from 27 Plans in Alternative 1, to 28 Plans in Alternative 2*)
- Authorizing use of 4.71 miles of previously closed or decommissioned Forest Service roads 4.26 closed and .45 decommissioned)
- Authorizing use of 8.98 miles of existing miner-created temporary roads
- Authorizing use of 0.3 miles of new temporary roads created by the miner whether by blading or continued travel
- Authorizing use of 9 existing fords on FS closed or existing miner-created roads
- Authorizing construction of 2 new fords (2 fords at Tetra Alpha Placer)
- Authorizing placement of 2 temporary bridges to be removed at the end of each operating season (Bull Run Site #2 and Ruby Group)
- Authorizing installation of 3 new gates on non-system miner created roads (East Ten Cent Creek and Hopeful 2&3)

Alternative 2 would authorize the approval of the Plans of Operations (Plans) as submitted by the miners. The total number of Plans proposed for approval under this alternative is 28 (DEIS Table 2-2). The Plans of Operations included in this alternative are in the analysis file. Summaries and sketch maps of each proposed Plan of Operations can be found in DEIS Appendix 8.

All Plans would contain a variety of requirements to meet 36 CFR 228 Subpart A. All operations must meet all other applicable State and Federal laws, including but not limited to the Clean Water Act, the National Historic Preservation Act, the Archaeological Resource Protection Act, the Endangered Species Act, State suction dredging requirements, and all applicable State and Federal fire regulations.

Alternative 3 – Plans of Operations as submitted by the Miners with Forest Service Requirements

- Authorizing approval of 28 mining Plans of Operations
- Authorizing use of 4.18 miles of previously closed or decommissioned Forest Service roads 3.73 closed and .45 decommissioned)
- Authorizing use of 8.21 miles of existing miner-created temporary roads
- Authorizing use of 0.43 miles of new temporary roads created by the miner whether by blading or continued travel
- Authorizing use of 8 existing fords on FS closed or existing miner-created roads
- Authorizing construction of 1 new ford (1 ford at Tetra Alpha Placer)
- Authorizing placement of 1 temporary bridge to be removed at the end of each operating season (Ruby Group)
- Authorizing installation of 2 new gates (East Ten Cent Creek)
- Inclusion of Forest Service Requirements in Plans of Operations for protection of water quality, soils, fisheries and other resources
- Inclusion of Monitoring Measures in Plans of Operations

This alternative includes the 28 Plans identified in Alternative 2. The Plans of Operations included in this alternative are in the analysis file. Summaries of each proposed Plan of Operations can be found in Appendix 8.

All Plans would contain a variety of requirements to meet 36 CFR 228 Subpart A. All operations must meet all other applicable State and Federal laws, including but not limited to the Clean Water Act, the National Historic Preservation Act, the Archaeological Resource Protection Act, the Endangered Species Act, and all applicable State and Federal fire regulations.

Monitoring requirements are specific to each Plan, except where State and Federal laws and regulations apply.

Map 3 of the DEIS displays locations of the Plans of Operations under Alternative 3.

401 Certification for Activities with the Potential for a Discharge

When an activity in a proposed Plan has been identified by the project hydrologist as having the potential for a discharge, 401certification from ODEQ must be presented to the Forest Service prior to approval and commencement of that mining activity. Any additional terms and conditions included in the 401 certification related to that activity will be incorporated into the Plan.

Use of Closed, Decommissioned and Temporary Access Roads

Table 2-3 displays a list of roads proposed for use under each alternative. The approved Plan of Operations will include a list of all access roads authorized for use by the miner.

Plan Expiration

Approval of all Plans would expire 10 years from the date of approval. Approval may be extended if they are operating within their terms and NEPA compliance is still adequate and current at the time of extension. The complete Plans of Operations are available in the analysis file. Summaries and sketch maps of the Plans can be found in Appendix 8.

Inclusion of Forest Service Requirements

Unlike Alternative 2, under this alternative, additional Forest Service Requirements would be added to the Plans of Operations for protection of water quality, soils, fisheries and other resources. These Requirements include: General Requirements (Appendix 2), Site-Specific Water Resource Protection Measures (WRPMs) (Appendix 1A), and other protection measures and monitoring, all of which are described below.

General Requirements

In addition to the protection measures and reclamation plans submitted by the miners under Alternative 2, each Plan would include General Requirements to meet minerals regulation 36 CFR 228 Subpart A (228 Regulations) that are specific to each Plan's activities (Appendix 2).

Site-Specific Water Resource Protection Measures (WRPMs)

Site-Specific Water Resource Protection Measures (WRPMs) would be identified for those operations that may result in a discharge into navigable waters or the broader waters of the State (Appendix 1A). The intent of this alternative is to "minimize adverse environmental impacts on National Forest System surface resources" (228 Regulations), and to meet the intent of the Clean Water Act.

Suction Dredging Requirements

The suction dredging requirements are the same as described for Alternative 2. All coverage and eligibility requirements; and terms, conditions, and requirements listed in Schedules A, B, C and D of the 700PM General Discharge Permit issued pursuant to ORS 468B.050 and 402 of the Federal Clean Water Act, along with the Oregon Department of State Lands permit for recreational placer mining within essential salmon habit (where applicable), would be adhered to by all miners proposing suction dredging in their Plan of Operations.

Site-Specific Fisheries Protection Measures

Protection of fish habitat and fish is embedded in PACFISH (MM1-MM6 and Riparian Management Objectives) (WWNF and UNF Forest Plans), State of Oregon 700PM permit, Oregon Department of State Lands (DSL) permit, Forest Service WRPMs (Appendix 1A), General Requirement G23 (where applicable), and the following Plan-specific protection measures:

Belvadear Placer

1. If a stream is dry below where the miner is working prior to August 15, then the miner must cease withdrawing water from the creek until flow exceeds the amount withdrawn.

Hopeful 2-3 (Placer)

Fords

1. Channel bed must be stable and water depths must be below the frame on the vehicle before the ford can be used in order to ensure that equipment can safely cross.

2. East ford, North approach: Rock the north approach to the slope break plus 25 feet of additional road. East Ford south approach (map of road segments in Hydrology report):
   Segment A: Rock the road

   Segment B: The road steepens for about 35 feet to reach the top of the hill. Place a water bar at the base of the steep section of road where there is a 2.5 foot wide flat area on the stream side of the road. Forest Service Minerals Administrator will be on site and verify water bar locations prior to construction. Design the water bar so that it diverts towards the flat area (only option as the other side is a hill slope). Place straw bales at the stream side edge of the flat area to trap all sediment leaving the road and preventing it from entering the creek. Do not rock this section because rock will only fill the water bars.

   Segment C: A water bar will be placed where the road flattens out. Forest Service Mernials Administrator will be on site and verify water bar locations prior to construction. This portion of the road will be rocked.

3. Ford unnamed tributary on the south side.

1. Rock both approaches to where 1) the road flattens our (east side) or there is a change in slops (west side)
2. Leave existing corduroy bridge in the channel.

Lightning Creek Placer

1. No water withdrawals are permitted in Lightning Creek after August 15 to protect fish migrating to spawn.

2. If a stream is dry below where the miner is working prior to August 15, then the miner must cease withdrawing water from the creek until flow exceeds the amount withdrawn.

3. On Lightning Creek water pump intakes should be screened with 3/32" plate screen (or equivalent) to avoid entrainment and/or intake of juvenile fish.

Olive Tone Placer

1. If a stream is dry below where the miner is working, then the miner must cease withdrawing water from the creek until flow exceeds the amount withdrawn.

2. See General Requirement G23. This is a protection measure used when withdrawing water from Olive Creek or Quartz Gulch.

Rosebud 1-4 Placer

1. Miner would limit loss of water in the processing pond to no more than 6 inches of water during daily operations.

Tetra Alpha Placer

1. A fisheries biologist or minerals administrator would monitor stream crossings to ensure that constructed fords do not create a fish barrier during low flows.

2. No water withdrawals are permitted in Boulder Creek after August 15 to protect fish migrating to spawn.

3. If Boulder Creek is dry below where the miner is working prior to August 15, then the miner must cease withdrawing water from the creek until flow exceeds the amount withdrawn.

Tetra Alpha Mill and Lode

1. No water withdrawals are permitted in Boulder Creek after August 15 to protect fish migrating to spawn.

2. If Boulder Creek is dry below where the miner is working prior to August 15, then the miner must cease withdrawing water from the creek until flow exceeds the amount withdrawn.

Transportation Protection Measures

Blue Sky/Bull Run

To prevent the public from using temporary mine access Road 7355-M1a, the miner will maintain the berm as an effective road closure, or if multiple trips will be made on Road 7355-M1a throughout the season, the miner will install a gate according to Forest Service specifications (project file).

Eddy Shipman

To prevent the public from using closed Road 7300-680, the miner will maintain the berm as an effective road closure, or if multiple trips will be made on Road 7300-680 throughout the season, the miner will install a gate according to Forest Service specifications (project file).

Ruby Group Placer

For safety reasons and to prevent the public from using the miner's ATV bridge on temporary mine access Road 1310-E1a, the miner will install a sign stating "Mining use only – ORMC - claim number XX". The miner will also install a gate in front of the bridge according to Forest Service specifications (project file).

Yellow Gold Placer

To prevent the public from using closed Road 7355-050, the miner will maintain the berm as an effective road closure, or if multiple trips will be made on Road 7355-050 throughout the season, the miner will install a gate according to Forest Service specifications (project file).

Botanical Protection Measures

Royal White

1. To preclude the possibility of any severe damage (e.g. direct mechanical destruction of plants or soil compaction) to the population of Lomatium tarantuloides at the Royal White site by inadvertent forays into the area by mining equipment, the miner will not breach the area protected by fallen trees immediately adjacent to Forest Service Road 1042970 that transects the population. Prior to commencement of mining activities, the Forest Service will fall small trees or install another type of barrier around the area to be avoided and protected.

Cultural Resource Protection Measures

Blue Sky 2

To protect and preserve the historic integrity of the hand-piled tailings adjacent to the south side of the Blue Sky 2 work area, conduct mining activities to avoid the hand-piled tailings adjacent to this work area with a 30-foot buffer. The hand-piled tailings are not located within the proposed work area.

Bunch Bucket

To protect and preserve the historic integrity of the two historic sites located on the edge of the work area, the operator will avoid the sites with a 30-foot buffer. The two historic sites are not located within the proposed work area.

To protect and preserve the historic integrity of the cabin, shed and outhouse, all of which are owned and used by the miner for Plan activities, the operator and Forest Service will work together to maintain the historic appearing character of the existing buildings.

Hopeful 1

To protect and preserve the historic integrity of the two-room cabin and outhouse, both of which are owned and used by the miner for Plan activities, the operator and Forest Service will work together to maintain the historic appearing character of the existing buildings.

L&H Placer/Lode

The historic structure (collapsed cabin remains) at the site is potentially eligible for the National Register of Historic Places. Before any mining work can be completed within 30-feet of the cabin remains, or in the cabin remains themselves, a determination of eligibility would need to be made. If the cabin remains are determined to be eligible for the National Register (a likely outcome), mitigation would be required for any mining work that would cause an adverse effect to the cabin remains. Mitigation measures would need to be consulted upon with the Oregon State Historic Preservation Office and possibly the Advisory Council on Historic Preservation. Mitigation would need to be funded by the mining operator.

Lightning Creek Placer

The historic mining site is being considered eligible for the National Register of Historic Places (NRHP). To protect and preserve the historic integrity of the seven historic structures proposed for use on the site, the operator and Forest Service will work together to maintain the historic appearing character of the existing structures.

Lucky Strike Placer/Mill

The historic mining site is being considered eligible for the National Register of Historic Places (NRHP), with the north end non-contributing to eligibility, and the south end with contributing standing structures.

For the north end of the site, where current mining work is planned in adits/shafts, no protection or preservation is necessary. No actual mining work is planned for the south portion of the site, but maintenance and possible restoration of the historic cabin and stamp mill are planned. To protect and preserve the historic integrity of the cabin and stamp mill, the structures should be maintained with historic appearance, and any work to be done should meet the Secretary of Interior Guidelines for Historic Preservation. If plans are proposed that would adversely affect the structures, mitigation would be necessary. Mitigation measures would need to be consulted upon with the Oregon State Historic Preservation Office and possibly with the Advisory Council on Historic Preservation. Mitigation would be funded by the mining operator.

Make It Placer

To protect and preserve the historic integrity of the historic structures and remains on the site, the operator will avoid all structures and remains (cabin, pole structure, footbridge, trash dumps and debris, dam/pond, and car parts) with a 30-foot buffer. The structures and remains are not located within the proposed work area.

Ruby Group

To protect and preserve the historic integrity of the historic collapsed structures and features during mining activities, the operator will avoid the structures and features with a 30-foot buffer. The structures and features are not located within the proposed work area.

Tetra Placer and Mill

To protect and preserve the historic integrity of heritage sites on the access road to the planned work areas, FS road 7355-010 used to access the work areas will not be widened, and any work on the road will require pre-approval by the Forest Service. The mine operator will be allowed to drive on the open Forest Service Road 7355-010, however the operator has not proposed any mining activity within 30 feet of the sites.

Monitoring

Monitoring and annual inspections by the Forest Service are the same as described under Alternative 2, but also include the additional evaluation of the Forest Service Requirements (including those for cultural resources) to determine if the miner has implemented these measures and requirements, and that they are achieving the desired results. In addition, two additional monitoring measures are included in Alternative 3.

Tetra Alpha Placer

A fisheries biologist or hydrologist would monitor the three stream crossings to ensure that constructed fords do not create a fish barrier during low flows.

Monitoring Closed Sites

Once an operation is closed (all proposed actions are complete), annual inspections by a Forest Service biologist or minerals administrator would occur the first three years and then and then every 5-10 years after, depending on the type of reclamation work done, to ensure that reclamation activities are complete and successfully implemented.

Comparison of Alternatives

The difference between Alternative 2 and Alternative 3 is the difference between what was proposed in the Miner's Plan of Operations, as submitted by the miner, and what the Forest Service proposed as changes to the miner's proposal. Under Alternative 3, all Plans would include Forest Service Requirements: General Requirements (Appendix 2), Site-Specific Water Resource Protection Measures (WRPMs) (Appendix 1A), and other protection measures and monitoring. Alternatives 2 and 3 also include proposals for use of Forest Service roads for mine access that are currently either closed or

decommissioned, or are temporary non-system roads. Some of the roads proposed for use differ between Alternatives 2 and 3.

Refer to Table 2-2 above for a comparison of the operations by alternative.

Tables 2-5 through 2-7 display a summary of impacts to issues and resources through implementation of each alternative.

Table 2-5: Comparison of Effects to Water Quality Issues/Key indicators for Water Quality

	Alternative 1	Alternative 2	Alternative 3
# of Plans Operations with potential to discharge sediment into a creek	4	16	2
# of Plans Operations with potential to discharge heavy metals into a creek	0	3	0
# of Plans of Operations with potential to discharge warm water	0	1	0
# of Plans of Operations with potential to discharge creosote	2	0	0
# of Plans Operations with potential to alter stream temperatures	0	5	5
# of Plans Operations with potential to alter stream flow	0	5	5

Table 2-6: Comparison of Alternatives for Fish Issues/Key indicators for Fish

Key Indicator	Alternative 1	Alternative 2	Alternative 3
# of Plans of Operations with stream fording	0	9	9
# of Plans of Operations with suction dredging in fish habitat	0	5	5

Table 2-7: Effects on Threatened, Endangered, and Sensitive Fish Species

Key Indicator		Alternative 1	Alternative 2	Alternative 3
# Plans of Operations with adverse effects to ESA Listed Fish Species and/or their Designated Critical Habitat	Bull Trout # of Plans	0	13	9
	Mid-C steelhead # of Plans	0	18	11

Preferred Alternative

Alternative 3 is the agency preferred alternative.